identification and characterization of endogenous resident mesenchymal stem cells (MSCs) in the adult mouse knee joint synovium in vivo. Currently, we are investigating the role of the endogenous MSCs in the mechanisms underlying joint homeostasis as well as development and progression of OA. The existence of functional MSC niches in the adult joint opens up unprecedented opportunities for pharmacological interventions by using medications that would target MSC niches and related reparative signalling pathways to activate and modulate intrinsic mechanisms of joint tissue regeneration. It is hoped that such interventions may halt progression of OA or even prevent OA, while restoring an effective homeostatic joint.

## I-25
## YEAR IN REVIEW: CLINICAL

M.C. Hochberg. *Univ. of Maryland, Baltimore, MD*

**Purpose:** To review important articles published since the 2011 World Congress of Osteoarthritis in the clinical and epidemiologic areas of osteoarthritis (OA).
**Methods:** A systematic review of the literature was conducted. Medline was searched through PubMed using the search terms "osteoarthritis [ti]". The search was restricted to English language, humans and all adults age 19+ for the time period "last 180 days." The search was further limited by adding the word "clinical."
**Results:** A total of 118 and 42 titles were identified in the initial and restricted searches, respectively. The author reviewed the titles of the 42 articles and chose several that will be briefly discussed during his presentation.
**Conclusions:** There have been some important clinical and epidemiologic studies of OA that have been published since the 2011 World Congress of OA. The search will be updated in the weeks just prior to the 2012 World Congress in order to identify and highlight newer literature.

## I-26
## OSTEOARTHRITIS YEAR IN REVIEW: REHABILITATION AND OUTCOMES

E.M. Roos, C. Juhl. *Sports Sci. and Clinical Biomechanics, Odense M, Denmark*

**Purpose:** This review highlights seminal publications of rehabilitation and outcomes in osteoarthritis (OA) of the hip or knee.
**Methods:** A systematic literature search was performed in Medline from July 2011 up to January 24, 2012 using the terms 'osteoarthritis, knee', 'osteoarthritis, hip' rehabilitation, physical therapy, exercise and preoperative intervention, outcomes. Trials evaluating rehabilitation interventions were included if they were randomized trials (RCT) or systematic reviews. Surgical interventions and pharmacology studies were excluded unless they included evaluation of a rehabilitation intervention. Outcome studies were included if they contributed methodologically to advancing outcome measurement.
**Results:** The literature search identified 259 hits. 21 publications were selected and reviewed that related to cost-effectiveness of non-pharmacological and non-surgical interventions, interventions evaluating care processes, decision making and information, weight loss, exercise (balance training, walking, neuromuscular, combined with self-management, aquatic vs. landbased, adherence), bracing, whole body vibration, short wave therapy and acupuncture/moxibustion.
One systematic review provided limited evidence for the cost-effectiveness of conservative treatments for the management of hip and/or knee osteoarthritis. This was supported by a large RCT showing patients randomized to exercise and self-management having a high probability of being cost-effective at 30 months.
Another meta-analysis found low to moderate evidence from mostly small RCTs demonstrating that pre-operative interventions, particularly exercise, reduce pain for patients with hip and knee osteoarthritis prior to joint replacement, and exercise with education programs may improve activity after hip replacement.
The increased focus on care strategies, decision-making instruments and patient information in osteoarthritis treatment was highlighted by several publications. A consensus-based strategy provided a framework for health care providers and patients with hip or knee osteoarthritis to discuss the optimal timing of the various treatment options. An audiovisual patient decision aid aiming at changing disadvantageous beliefs and encourage physical activity was associated with a small effect.
The studies on exercise added information on treatment effect of important aspects such as type, combined treatments, and adherence to exercise.
A single high quality RCT found low-energy-diet induced weight loss to relieve pain also at one year and lead to independent losses of leg muscle tissue and strength, indicating the need for exercise in conjunction with low-energy-diet induced weight loss programs.
A systematic review failed to provide conclusive evidence for the effectiveness of moxibustion (warm acupuncture) compared with drug therapy in rheumatic conditions. The total number of RCTs included in this review and their methodological quality were low. An RCT found moxibustion combined with intra-articular injection of sodium hyaluronate to be more effective than intra-articular injection of sodium hyaluronate alone. A secondary analysis of 10 000 patients included in one of four RCTs for one of four chronic pain problems, including hip or knee osteoarthritis, found that age, education, duration of illness, baseline pain, and some concomitant diseases predicted treatment outcome in both groups (routine care with or without acupuncture). Patients' characteristics that enlarged the acupuncture effect were being female, living in a multi-person household, failure of other therapies before the study, and former positive acupuncture experience.
A single high quality RCT among persons with symptomatic lateral PF OA found the effects of a specific realigning PF brace not to be of clinical or statistical significance.
One RCT found pulsed shortwave treatment to be an effective method for pain relief and improvement of function and quality of life in the short term in women with knee OA.
The 16 outcomes papers considered relevant did not add significantly to current knowledge.
**Conclusion:** The current clinical focus on non-pharmacological and non-surgical treatment of hip or knee OA translates into research findings that increasingly are included in meta-analysis improving the evidence level for non-pharmacological and non-surgical treatments in hip or knee OA. Information, exercise and weight loss are supported as first line treatments and as adjunctive treatments prior to surgery.

## I-27
## YEAR IN REVIEW – BIOLOGY

P.M. van der Kraan. *Radboud Univ., Med. Ctr., Nijmegen, Netherlands*

An overview will be given on selected topics that have advanced our understanding of the (patho)biology of osteoarthritis. More and more it becomes clear that osteoarthritis is not a cartilage-only disease but that all joint tissues are involved and contribute to the overall disease process. Osteoarthritis is an affliction of the whole joint. In addition to cartilage, attention will be paid to other tissues such as the synovium. The role of cellular communication, inflammatory mediators, for instance components of the complement system, and the role of miRNA will be addressed.

## I-28
## YEAR IN REVIEW: BIOMARKERS

A. Mobasheri. *Univ. of Nottingham, Sutton Bonington, United Kingdom*

**Purpose:** Biomarkers have the capacity to detect cartilage degradation in degenerative joint diseases such as osteoarthritis (OA). They can provide useful diagnostic information by reflecting disease relevant biological activity in the joint and predict the course of disease progression. In addition, they can serve as surrogate endpoints in the drug discovery process. The "Year in Review" Plenary Session at the end of the World Congress on Osteoarthritis is becoming a well-established tradition. It provides a unique opportunity to build on the reviews from the previous two years and summarize the key published papers related to OA biomarkers. This presentation reviews the biomarker papers published between the OARSI 2011 Congress held from 15–18 September 2011 in San Diego, California and the OARSI 2012 meeting, which will be held from 26–29 April 2012 in Barcelona, Spain.
**Methods:** The PubMed/MEDLINE and SciVerse Scopus bibliographic databases were searched using the following keywords: 'biomarker' and 'osteoarthritis'. The PubMed/MEDLINE literature search was conducted using the Advanced Search Builder function (http://www.ncbi.nlm.nih.gov/pubmed/advanced) and specifically focused on the eight months between the 2011 and 2012 meetings.
**Results:** Approximately thirty-two new OA biomarker papers were published at the time this abstract was written (February 14, 2012). It is estimated that fifty papers will be published by April 2012. Some of